USS Abraham Lincoln CVN-72

USS ABRAHAM LINCOLN
Local Area Network
Management

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Agenda

- Pre-existing Conditions
- Road to Baseline
- Configuration Management
- Policies
- Future Plans
- Information Assurance

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Pre-Existing Conditions

Pre-Existing Conditions

- Network Management – No Baseline
  - Inadequate documentation for hardware/software configuration baseline
  - Addition of drops to the ISNS LAN without proper authorization
  - New drops not properly labeled and tagged
  - Installation of Non-Program of Record (POR) LinkSys and Cisco switches/hubs
  - Ship’s drawings out of date
  - Software and hardware installed not listed on the PPL/SSIL/CPL
  - Installed ready-service-spare blades in switches to expand network
  - Inaccurate hardware inventory

Pre-Existing Conditions

- Policies
  - Management policies non-existent or significantly out dated
- Training
  - Insufficient training for Division Officers, LCPOs, and LPOs on Network Management basics
  - Inadequate training path for switch maintainers and operators
  - Insufficient user training

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Configuration Management

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Road to Baseline

- Baseline process initiated in support of INSURV and scheduled COMPOSE upgrade
- Network switch/drop validation
  - Verified individual ports on every blade of every switch
  - Verified distant end location by cable tag for every drop
  - Compared results with drawings from multiple POR installations
  - Documented Non-POR drops
- Network hardware inventory validation
  - Identified/located all hubs and switches
  - Identified/located all computers and peripherals
  - Documented Non-POR hardware
- 12 month evolution to completion

Configuration Management

- LAN Expansion only authorized through the SHIPMAIN Ship Change Document (SCD) process.
  - CVN72 removed approximately 325 Non-POR network drops
  - CVN72 removed Non-POR hubs/switches

Configuration Management

- SHIPMAIN
  - Per PEO C4I SAN DIEGO CA (091745Z JAN 07), CVN 72 submitted SCD 5237 requesting POR documentation of 220 operationally required Non-POR network drops.
    - CNAF funded SCD updating last known set of network drawings from CY2000 to reflect current configuration
  - During dPIA 2006/07, only systems/programs with approved SCD's authorized to install on ABRAHAM LINCOLN

Configuration Management

- CVN72 has de-populated over crowded switches
  - Based on Alcatel 80% of individual switch capacity recommendations
  - Total virtual port capacity of a switch X 80%
  - Less 22 virtual ports for infrastructure support (switch dual homing to backbones)
  - Less 10 virtual ports held in reserve by ADP (populated by exception)
  - Total number of available ports per switch = 173
  - Note: each Omnistack added to a switch consumes 11 virtual ports

Combat Systems Configuration

- Software
  - COMPOSE installation baselined software configuration on CVN 72
  - Software authorized by PMW 160 via the PPL is installed on the CVN72 ISNS network
- Hardware
  - Hardware authorized by PMW 160 via the CPL is installed on the CVN72 ISNS network
- Integrated Systems/Non-ISNS Systems
  - Third Party Systems authorized by PMW 160 via the SSIL is installed on the CVN72 ISNS Network.
  - Third Party Systems are required to submit a current SSAA and IATO/ATO prior to installation.

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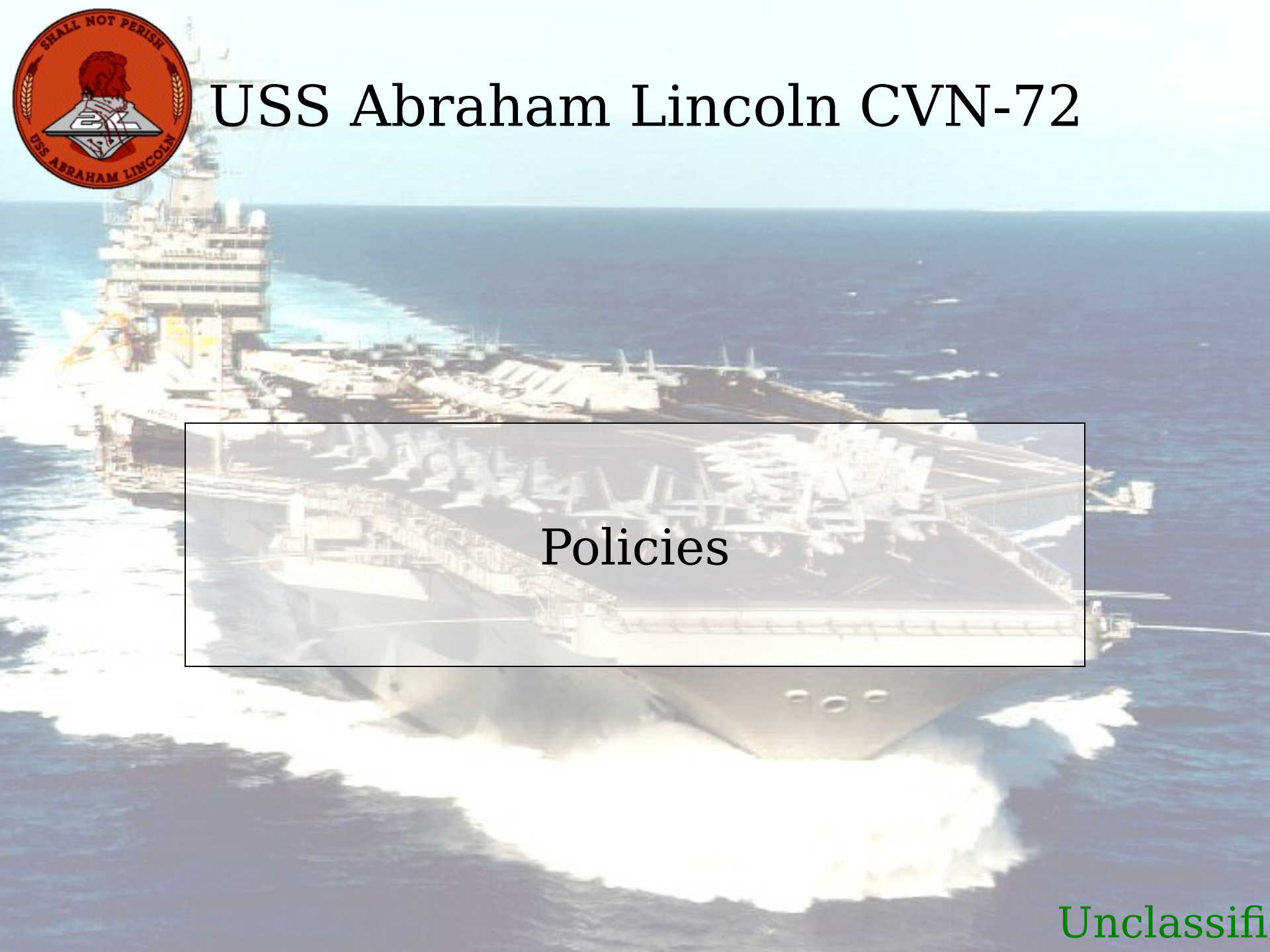

Policies

Combat Systems Network Policies

- Prior to IT support policy approval, the drafter must show:
  - Policy is enforceable
  - Policy is auditable
- Policies created and/or modified recently:
  - Set size limits on User Home Drive
  - Internet usage policies
  - Bandwidth management (Tier's)
  - Shared Drive standardization and access control
  - Exchange Server Mailbox and Public Folder management

Daily Reports

- Provides visibility of disk space utilization and critical operations
  - User Profile Directory
  - User Home Drive
  - Share Drive
  - Exchange Disk Space
  - Critical Backups
  - Targets Individual Accounts

IT Training

- Training, Training, Training
  - Take advantage of all training opportunities
  - Command will accept personnel shortages in customer service to support IT training
  - Individuals in the division pull “double-duty” when needed to support training opportunities
- Training opportunities ARE training requirements
  - Combat Systems proactive in obtaining IT training quotas

Our Keys to Success

- Maintaining standard configuration established by the Program Manager
- Establishing measurable and verifiable policies
- Routine audits
- Aggressive training
- Unrelenting, steadfast adherence to configuration management
  - Unauthorized LAN expansion
  - Installation of unapproved and untested software/hardware
  - Managing user expectations

Our Combination to Success

- Potentially unique CVN 72 Combat Systems leadership team (CSO, CSIO, CSMO) with strong backgrounds in:
  - Program Manager/SYSCOM, Fleet Commander, Combatant Commander and DOD policies, procedures and processes regarding Configuration Management and Information Assurance.
- CVN72 experience indicates that these skillsets are critical and recommends they are included in the C5I training pipeline prior to arrival on CVN.

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Concerns & Issues

ISNS Issues

- Aging Switches
  - Slow network performance
  - 80% of switch blades only support 10 MBPS ports.
- Ready Service Spares
  - PC warrantee support very good, but time late
  - At one point during deployment 30 desktops off line waiting for parts
  - On Board Spare for Server Parts.
- NMCI Integration
  - Shore elements (Air Wing, Embarked Staff)
  - NMCI workstations pose an inherent risk to CVN72 domain due to lack of ability to “push” IAVA and security patches

Required Assistance

- Asset Inventory
  - Require an automated tool to reduce manhours supporting audit.
- Spam Blockers
  - Require an automated tool to support email management.
- Anti-Spyware
  - Pest Control
  - Require an automated tool to support network security
- Network Attached Storage (NAS)
  - Lack of shipboard storage space
  - Include as authorized product on SSIL/CPL
- Intrusion Detection System (IDS)
  - Inadequate Training
  - Standard Fleet Wide PQS

Switch Issues

- Location
  - Geographic architecture of switches does not match user workspace density
  - Majority of the network drop requirements reside within workspaces in the proximity of the island structure
- Switch Cabinet
  - Switches often overheat due to lack of air flow
  - Switches should not be located where the general population can access the switches
  - Access to switches is problematic. During a power loss, operators are unable to reach switches before the UPS fails

PPL/SSIL/CPL (PSC) Issues

- Program Managers are not ensuring their products are included in the ISNS PPL/SSIL/CPL before distributing product to fleet users.
  - STELLA
  - EPSQ
  - PCEDVR
  - Netscape
  - DOD Sponsored Programs: PODCAST (Ipod)
- Falls behind commercial software version releases and lacks many common needed user applications
  - Adobe Professional
  - Internet Explorer
  - Microsoft Office Products (FrontPage, Project, Visio)
  - PDA Software (Hot Sync)
  - Blackberry

PPL/SSIL/CPL Issues

- The process to get software, hardware and systems on the PPL/SSIL/CPL is hard to achieve
  - Fleet units do not have the ability to conduct security and interoperability assessments
  - CVN 72 submitted 2 Network Change Requests (NCR) prior to dPIA (Sept ’06) in preparation for COMPOSE installation with no response to date.

Training and Management Issues

- No comprehensive LAN management policy published for afloat networks by CNAF/SPAWAR/NETWARCOM
- 3-day course needed to train afloat LAN managers on Configuration Management
  - User/Group Management
  - Information Management Policies
    - Web Page Content
    - Email Public Folders and Private Mailboxes
    - Bandwidth and File Server limitations/restrictions
  - Topology Management
  - Afloat Policies and Procedures
  - Expectation of users VS configuration management
- Funding source for civilian network operations certifications not identified (A+, Security +, CCNA, MCSE, etc)

File Server Size Issues

- File servers that support the user Home Drive and the Command Share Drive are 400 GB each.
  - CVN72 currently supports 3700 NIPRNET user accounts.
- Defrag utility needs 20% free space on file server to complete.
  - 80% of drive available for use (320 GB).
- Space available for user home drives (Z:)
  - 320/3700 = 0.0864GB = .864 MB per user
  - Users have less than 1 MB

File Server Size Issues

- Data transfer rate between the tape drive and the hard drive significantly decreased backup performance.
- To reduce the amount of time to save data, CVN72 has imposed stringent policies to restrict the amount of data that can be save to the user's Home Drive
  - Restrictions ensure that the file server supporting the user Home Drive server will not grow larger than 250 GB.

Uninterrupted Power Supplies (UPS)

- The edge switch UPS (APC-1400s)
  - At end-of-life requires replacing battery packs and UPS units
  - 1400-Models are no longer produced
- The ISNS Server UPS
  - Replaced all (4) UPS units (Clary SRN Series 2400VA) a year ago.
  - Replaced all (4) UPS battery packs during deployment.
- UPS do not “hold the load” for required PMS time of 9 minutes and only average approximately 4 minutes
- During a Network Forum at Everett Naval Station, the ISNS POR Managers reported that there are "known issues" with the ISNS UPS units.

Internal Networks

- Multiple CVN 72 departments manage non-ISNS networks
- Many departments (non-Combat Systems) receive insufficient system administration and network management training for non-ISNS networks
- No additional IT manning to support multiple non-ISNS networks
  - Support for non-ISNS networks provided by ISNS funded billets
  - Inadequate APL documentation or Planned Maintenance (PMS)
- Examples
  - Smart Carrier – Engineering Department
  - Navy Cash – Supply Department

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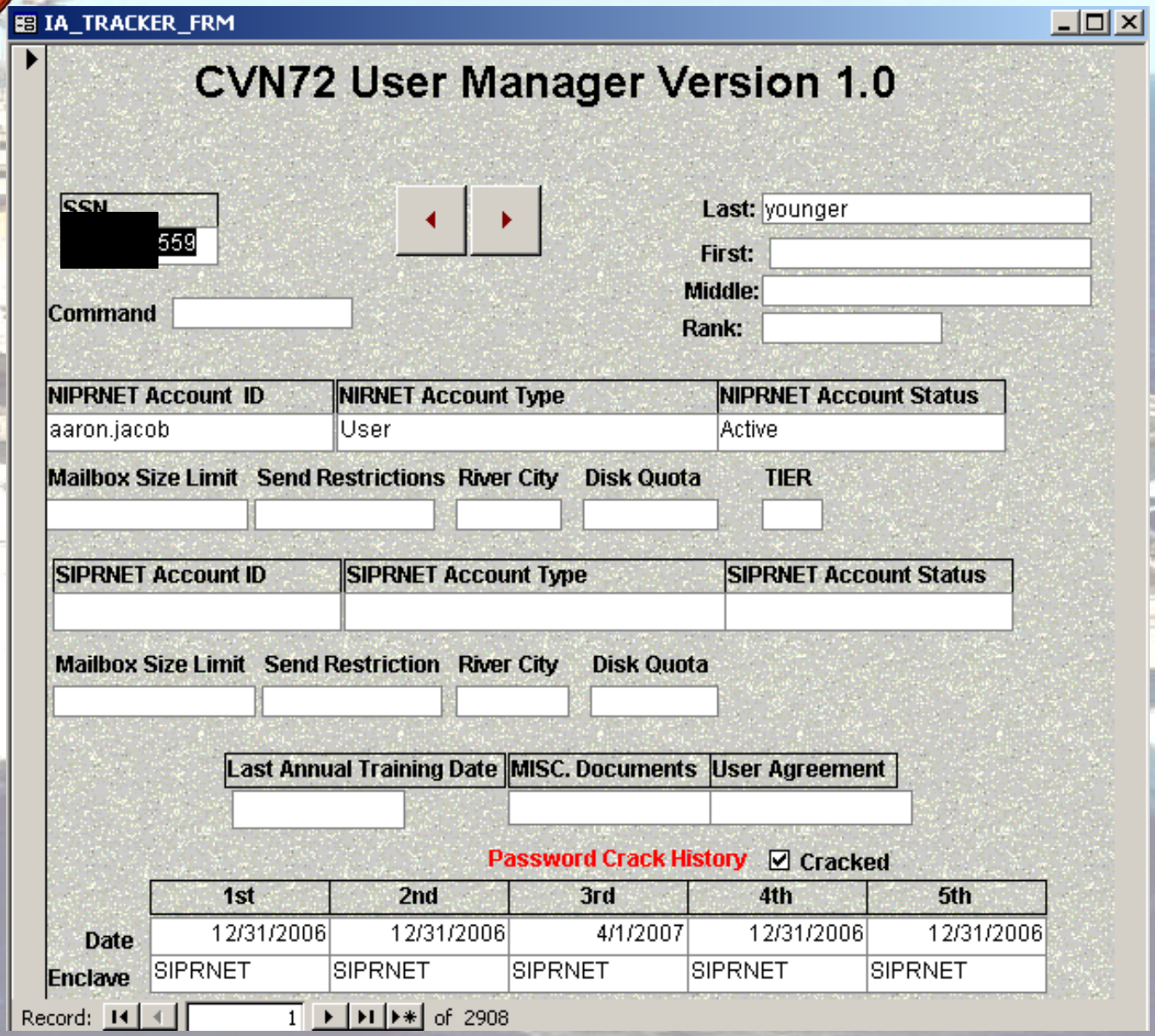
Future Plans

Configuration Management

- Complete CM instructions
- Establish training plan to obtain civilian certifications
- Reduce man-hours consumed with inventory by requesting COTS package through the PPL/SSIL approval process
- Conduct port locking on switches
- Find or develop tools to reduce manpower required to monitor and maintain baseline configuration
- Complete user management database created by CVN 72

CVN72 User Manager



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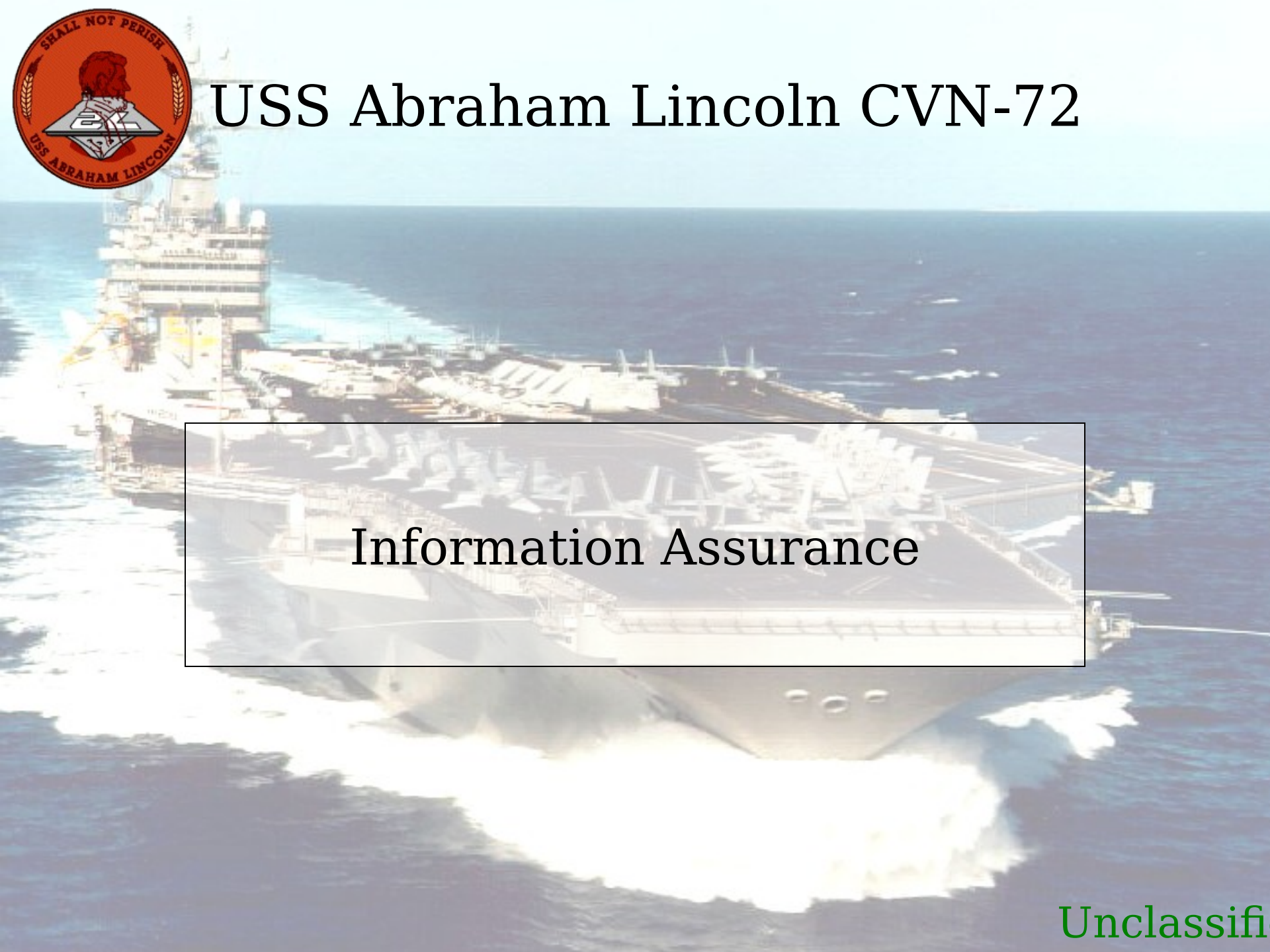
Shipboard Training

- Develop user training curriculum to include:
  - Basic PC troubleshooting and solutions
    - Mapping network drives
    - Adding network printers
    - Basic housekeeping: Home Drive and Inbox management
  - Basic Microsoft desktop applications
    - Outlook
    - PowerPoint
    - Word
    - Excel
  - Information Security



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Information Assurance

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Information Assurance Division Who's Guarding the Hen house?

- Separate Operations and Customer Service from the Configuration Management (CM) and Information Assurance Vulnerability Management (IAVM)
  - Operations and Customer Service - Automated Information Systems Officer (AISO)
  - CM & IAVM – Information Assurance Manager (IAM)
- Create separate Information Assurance (IA) Division
  - Network Security
  - Command Asset Management

Pre-Existing Conditions

- Information Assurance
  - Lacked proactive approach to CND
  - User agreement forms and user training not tracked
  - IAVM not consistent between SIPRNET and NIPRNET
  - No set schedule for audits: web browsing, file content

Information Assurance Division

- Full Employment of Departmental/Divisional Information Assurance Officers (IAO)
  - Designation letter clearly identifying responsibilities to the IAM and Commanding Officer
  - Monthly Inventory
    - Hardware (computers, printers, etc)
    - Network Configuration (LAN Drop Inventory)
    - Software

Aggressive CND Router Configuration

- CVN72 employs default “deny” Access Control List (ACL) for systems and TCP/UDP ports
  - Router only allows incoming traffic on assets that need to “talk” to the outside world
    - DNS Server
    - Proxy Server
    - Exchange Server
    - Replication servers
- SPAWAR policy requires all other Program Mangers to utilize the proxy server for outside connectivity
  - Not being adhered to by Program Mangers (CAC, Disbursing)
  - Combat Systems forces installers to go through proxy server
- Extremely effective against Red Team activity
- Extremely effective in identifying port scans
  - CVN72 logs all rejected connections

Aggressive CND
CVN72 IA Cell

- 24/7 IA Cell
  - Single point of contact
- Methodically conduct vulnerability scanning of assets on the network.
  - Ensures the command that network assets are at the appropriate security level and settings are maintained.

Aggressive CND
CVN72 IA Cell

- Limited employment of Retina
  - Only using Retina
  - Daily discovery scans
  - Investigate “new” assets discovered
- Daily IA report providing the command visibility of network health and situational awareness. Daily report includes:
  - Viruses definitions status
  - Results of the daily password cracks
  - Results of inappropriate use of the Internet
  - Pending NCR with NCDOC
  - Pending IAVA/B actions
- Active blocking and researching of remote proxy web sites

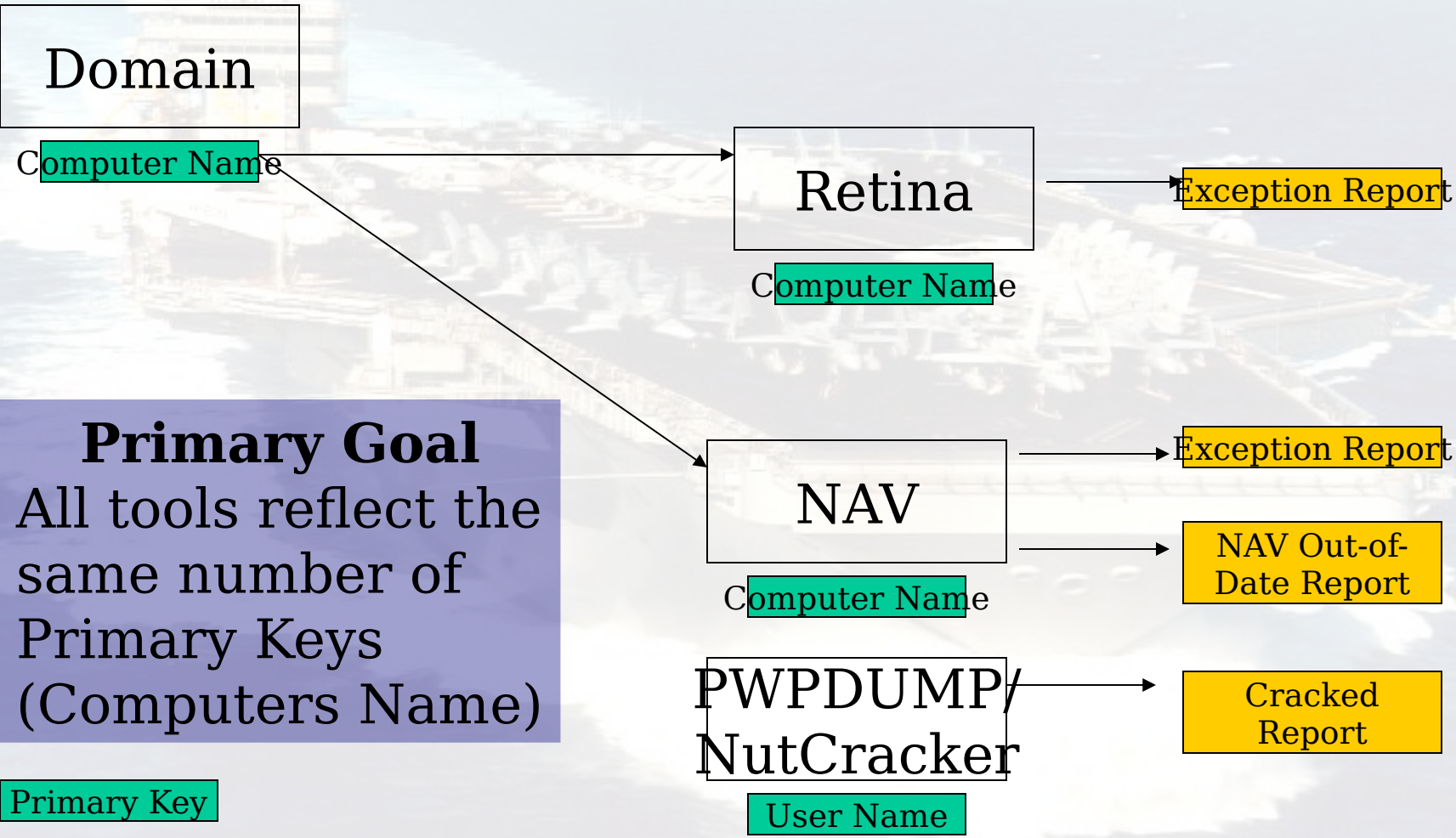
IA Division Successes

- Training accomplished & continuing
  - Watch Stander can process incident reports accurately
  - Watch Stander can report and direct required actions for information spills
  - Watch Stander can efficiently monitor and CND/IDS
- Have attained global situational awareness
- Identified and blocked over 1,200 remote proxy websites

Information Assurance Division

- Continue to develop policies and procedures
- Increase watch standers level of knowledge
- Establish training plan to obtain civilian certifications
- Expand IA Cell to include more robust network monitoring tools

IA Daily Report



Primary Goal

All tools reflect the same number of Primary Keys (Computers Name)

Primary Key

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Concerns & Issues

Web Browsing Policies

- Tools provided by standard ISNS configuration are inadequate to enforce DON policy on use of the Internet.
- CVN72 uses Microsoft Access to audit the proxy and Winsock proxy logs (requires 2 hours per audit).
- CVN72 employs the COTS product “Surf Control” to proactively monitor and control web browsing content.

End Point Security

- USB Removable Hard Drives and USB Thumb Drives
  - Not previous a concern on NIPRNET
  - DON Safeguard Personally Identifiable Information (PII) (NTD) 04-07.
  - No tool for enforcement
  - Required Hardware (Thumb Drives) on PPL/SSIL/QPL
- Effective 01 October 2007, storage of any form of PII is prohibited on personally owned computers (to include laptops), mobile computing devices and removable storage media.
  - No tool for enforcement

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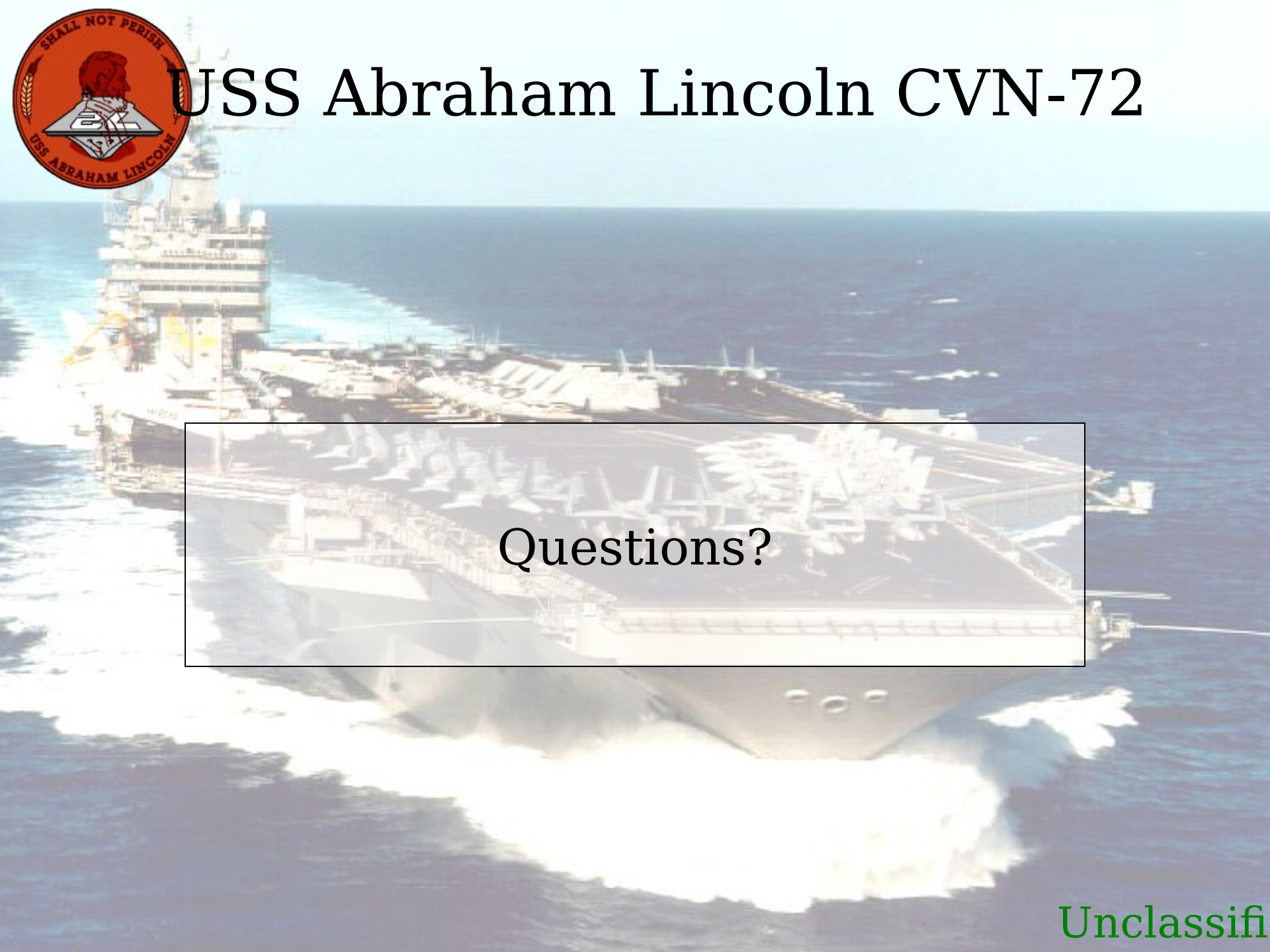

Questions?

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